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E-Service Intelligence

Methodologies, Technologies and Applications

With 190 Figures and 68 Tables

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PREFACE

Many business organizations and government departments are nowadays developing and providing Internet based electronic services (e-services) featuring various intelligent functions. This form of e-services is commonly called *e-service intelligence* (ESI). ESI integrates intelligent technologies and methodologies into e-service systems for realizing intelligent Internet information searching, presentation, provision, recommendation, online system design, implementation, and assessment to Internet users. These intelligent technologies include machine learning, soft computing, intelligent languages, and data mining etc. ESI has been recently identified as a new direction for the future development stage of e-services.

E-services offer great opportunities and challenges for many areas of services, such as government, education, tourism, commerce, marketing, finance, and logistics. They thus involve various online service providers, delivery systems and applications including e-government, e-learning, e-shopping, e-marketing, e-banking, and e-logistics. ESI is providing with a much higher quality presentation of web information, personalized online recommendation, customaries online decision support, direct user participation in organizational planning, and more integrated seamless link online services. It also has e-services evolved into online knowledge discovery and user analysis, and becomes adaptive, proactive and accessible from a broader variety of devices. We have begun to see more and more successful developments in building intelligent functions and systems of e-services such as web search by fuzzy matching; web usage mining by fuzzy sequential pattern; Internet shopping systems using multi-agents; product recommender systems supported by genetic algorithms; e-logistics systems using optimization models; online customer segments using data mining; rough set based ontology of mapping in online service integration; online question/answer service systems using fuzzy logic; visualized web information presentation; game theory based e-negotiation; inference approach in e-service cost benefic analysis; and knowledge discovery through using case-based reasoning in e-learning systems. It is thus instructive and vital to gather current trends and provide a high quality forum for theoretical research results of ESI and practical developments of

intelligent e-service applications for various government and business organizations.

This book aims at offering a thorough introduction and systematic overview of the new field. It consists of 32 chapters invited and selected from more than 60 submissions distributed in about 15 countries and regions and covers the state-of-the-art of the research and development in various aspects including both theorems and applications of ESI in five parts: (1) E-Services and Intelligent Techniques; (2) Web Information Presentation, Search, and Mining; (3) Personalization, Privacy, and Trust in E-Services; (4) E-Service Evaluation, Optimization and Knowledge Discovery; and (5) Intelligent E-Service System Developments.

The intelligent techniques applied in e-services, reported in this book, include fuzzy logic, expert systems, case based reasoning, artificial neural networks, Bayesian network, game theory, multi-criteria decision analysis, rough sets, data mining, linguistic techniques, multi-agents, ontology, sensory model, Chaos theory, genetic algorithms, and many of their combinations. The detailed application fields of ESI, presented in this book, involve personal e-Banking, e-Negotiators, e-Map, one-stop e-Shopping, secure e-Transactions, integrated e-Supply chain, learner-oriented e-Learning, e-Government service integration, online auctions, online payments, online sports services, online human resource management, online customer experience management, online user behaviors analysis, and online user trust evaluation. The research methodologies shown in these chapters include theoretical investigations, framework development, model establishment, approach proposing, case based study, survey data analysis, hypothesis testing, software implementation, and experimental assessment.

There are more than 20 national research grants to have supported the completeness of the researches presented in this book. Special thanks are due to all the authors of all chapters for their timely cooperation. Each chapter of the book is self-contained and we hope this volume will benefit many readers around the world.

June 2006

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